

with domestic cows. These animals were invariably very conspicuous in their herds by virtue of their size, heavy build, exceptionally large horns and, on closer observation, very much bigger hooves.

Post Box 139,
BOMBAY-1,
March 25, 1953.

SURENDR LALL

5. WILD BUFFALOES AND TAME

(With a photo)

With reference to the note on the above subject by R. P. Noronha, the quotation from Captain Baldwin and the interesting comment on these two by Surendr Lall [above], the following observations may be of interest. They are the result of some 16 years' study of this problem in those parts of Assam where herds of domestic buffaloes are grazed in close proximity to wild ones.

Firstly, I do not think it right to presume that the solitary wild bull buffalo which joins up with a herd of domestic ones has in all cases been driven out from the wild herd by a stronger bull. As in the case of elephants and gaur, the solitary bull buffalo may have left the wild herd of its own free will: the advantages to it of such



Wild bull buffalo with domestic cow near Kaziranga Wild Life Sanctuary, Assam

a course are obvious—a harem with little or no rivalry! I agree with Surendr Lall that the solitary wild bull buffalo mixing with domestic herds may be either an old or a middle-aged animal.

Captain Baldwin seems to have contradicted himself by saying first that 'The Assamese keep no tame bull buffaloes so they are dependent on the wild bulls for keeping up the breed', and later that 'We have frequently shot these bulls at the request of the villagers'. Surendr Lall is correct in stating that the owners and herdsmen of domestic buffaloes in Assam strongly dislike the wild bulls coming into their herds. But they have no option in the matter. They cannot keep a domestic bull in such circumstances, for if they do it instantly gets killed or driven away by the incoming wild one. The wild bull also usually chases away herdsmen, and often follows the domestic herd up to the picketing lines and thereby prevents milking.

With regard to Surendr Lall's belief that approximately 90% of the calves of wild bulls and domestic cows are still-born, and his reference to J. W. Best's statement that the cows die at the time of calving (in Madhya Pradesh), these statements need qualifying, I think. Enquiries made by me have shown that about 75% of such calves die between birth and eight days after birth, because the domestic cows have not sufficient milk to feed the half wild calf, owing to the poorer grazing than that enjoyed by the wild ones. Of the cows themselves details are not available, but I have been told that the smaller sized domestic cows often fail to conceive, or else if they conceive they die at the time of calving. The bigger and stronger domestic cows conceive more easily, and usually survive the ordeal of producing a calf larger than normal.

As the wild buffaloes are larger and stronger animals, so the calves of wild bulls and domestic cows are larger, sturdier and handsomer than those which are domestic on both sides. Also, as Surendr Lall points out, their horns are larger and more circular, and their hooves bigger.

A point which seems to have been missed is the marked decrease in the milk supply of cow buffaloes which have been bred from a wild bull. The owners and herdsmen on the north and south boundaries of Kaziranga Wild Life Sanctuary in Assam recently informed me that the milk supply of cross-bred cows drops by a half, from $1-1\frac{1}{2}$ seers to $\frac{1}{2}-\frac{3}{4}$ seers per day per cow. These cows of mixed descent are also reported to give trouble to the herdsmen at time of calving.

On the other hand A. J. W. Milroy, a former Conservator of Forests of Assam and an ardent wild life conservationist, believed that the milking capacity of cross-bred cows was actually greater. In a report on the year 1935-1936 he wrote '... greater encouragement given to the breeding of the half-wild stock (i.e. the domestic herds which are loosely grazed near the haunts of wild ones) for which Assam has always been famous, and which needs crossing with the wild bulls from time to time to preserve its size and milking qualities'. More investigation is needed on this point.

Previous articles and notes in the journal of this Society have usually dealt with the shikar aspect of buffalo. In these more enlightened times, when the camera and the note-book have largely replaced the rifle, a complete ecological study of the wild buffalo seems called for.

A great deal of observation in the different parts of the country where the wild buffalo is still found needs to be done, in order to produce a complete assessment of the advantages and disadvantages of wild blood in herds of domestic buffalo. The opinions of stock-breeders, agriculturists and veterinary surgeons should also be sought.

In order to make the task easier for the staff of the Forest Department, buffalo owners, herdsmen and other persons interested in this subject, I have compiled the following questionnaire which may be of some use.

1. The wild bull buffalo.

- (a) Is the solitary wild bull which leaves the wild herd usually a young bull? or a middle-aged one? or an old one?
- (b) Is it usually ousted from the wild herd by a stronger bull? or does it leave the wild herd of its own accord?
- (c) Are there occasions when more than one wild bull joins a domestic herd? If so, with what result?

2. Behaviour of the wild bull.

- (a) Does it always kill or chase away the domestic bulls?
- (b) Does it always chase and give trouble to the herdsmen and milkers?
- (c) Does it always return to the jungle at the end of the day? or does it wait outside the picketing lines till morning?

3. Seasons.

- (a) Do the wild bulls join the domestic herds at all times of the year? or during special seasons?
- (b) Do domestic buffalo come into 'season' more in certain months than in others?
- (c) What is the period of gestation, and when are calves usually born?

4. Domestic cows served by a wild bull.

- (a) Do all cows conceive? or only some? If so, which ones?
- (b) Do any cows get injured or die at time of service? If so, what proportion, and why?
- (c) Do any cows die at time of calving? If so, what proportion, and why?

5. The offspring of wild bull and domestic cow.

- (a) Do all calves survive? If not, what proportion die?
- (b) Are the calves always larger and stronger?
- (c) What other differences are apparent in these calves?
- (d) If the calf is a female, when grown up is the milk supply greater or less than that of a purely domestic cow? By what amount?
- (e) Does such a cross-bred cow give trouble at time of calving? or at time of milking?
- (f) If the calf is a male, when grown up does it fetch an equally good price as a purely domestic animal when sold?

- (g) Are there any other advantages or disadvantages of wild blood coming into a domestic herd? If so, what are they? And do the advantages outweigh the disadvantages, or vice versa?

It is suggested that, with the approval of the Conservators of Forests, all reports collected through personnel of the Forest Department should be sent to the respective Divisional Forest Officers, copy to Mr. E. P. Gee of Doyang T.E., Oating P.O., Assam, who will be only too pleased to compile all information thus received.

DOYANG TEA ESTATE,
OATING P.O.,
ASSAM,
April 25, 1953.

E. P. GEE.

6. CANNIBALISM IN HEDGEHOGS

The hedgehogs, *Hemiechinus auritus collaris* Gray and Hardwicke, and *Paraechinus micropus* Blyth are found in abundance in this semi-arid region of Rajasthan. During my studies on their embryology I have collected a large number of them. In the laboratory I keep them in wooden cages of large size, in which a trial has been made to provide them with more or less natural conditions. The cages are kept in well ventilated rooms where plenty of air and light can be had.

In August-September 1952, when their breeding season was over the females were caught from their respective burrows along with their young ones. Many of the latter were in the 'closed eye' and suckling stage. But they possessed a remarkable power of rolling up; they used to lie during the day as a ball of spines, the young being born with spines.

Once our servant totally forgot to feed them for about a week, so the hedgehogs were very hungry and famishing. One evening two of them were noticed attacking a young one which was on the move. The points of attack were the posterior limbs, which were later chewed. The young made a pathetic noise which was not very easy to hear. After a short while the attackers succeeded in getting the young unrolled and started eating the abdomen. Three others joined them. I cannot, however, ascertain whether the mother of the young was also among these, since the body of a hedgehog is so covered with spines that it is very difficult to tell the sex just by looking at one.

The other night a hedgehog, *Hemiechinus a. collaris*, died a natural death. Next morning I observed that both the species, *H. a. collaris* and *P. micropus*, were busy breakfasting on the carcase. In January 1953 I fed them on a dead specimen with its abdomen cut open. Most of the hedgehogs present in the cage relished the viscera.

Thus both types of cannibalism are present among hedgehogs: feeding on a dead companion, and killing it and then feeding on it.